FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 14 to April 20, 2013 (Week 16)

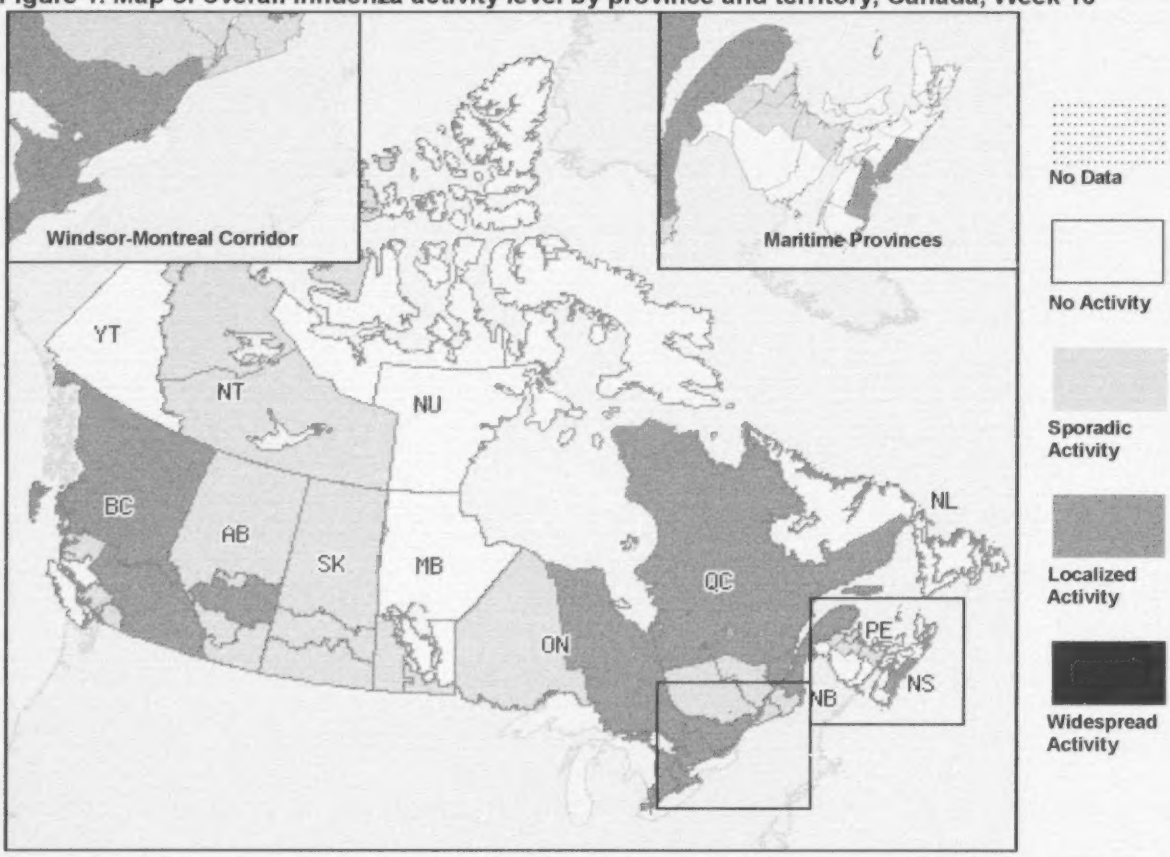
Overall Summary

- The percentage of laboratory tests positive for influenza has been stable at approximately 12% over the past six weeks. Detections of influenza B continued to increase, with influenza B detected in 89.4% of positive specimens in week 16.
- The ILI consultation rate was stable, and the number of regions reporting localized activity increased compared to the previous week, both likely due to the continued circulation of influenza B.
- Detections of rhinovirus and parainfluenza continued to increase slowly while detections of other respiratory viruses were stable or decreasing.

Influenza Activity (geographic spread) and Outbreaks

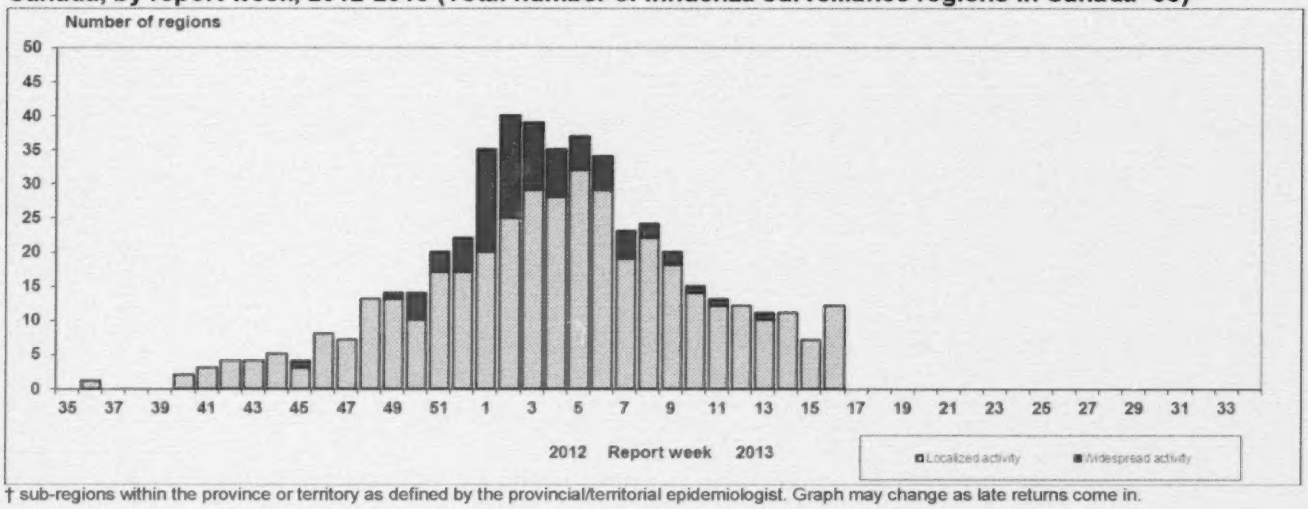
In week 16, no regions reported widespread activity, twelve regions [BC(2), AB(1), ON(5), QC(2) and NS (2)] reported localized activity and 23 regions reported sporadic activity. The number of regions reporting widespread or localized activity increased compared to the previous week (Figures 1 and 2). Ten new influenza outbreaks were reported: nine in long-term-care facilities, and one in a school (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 16



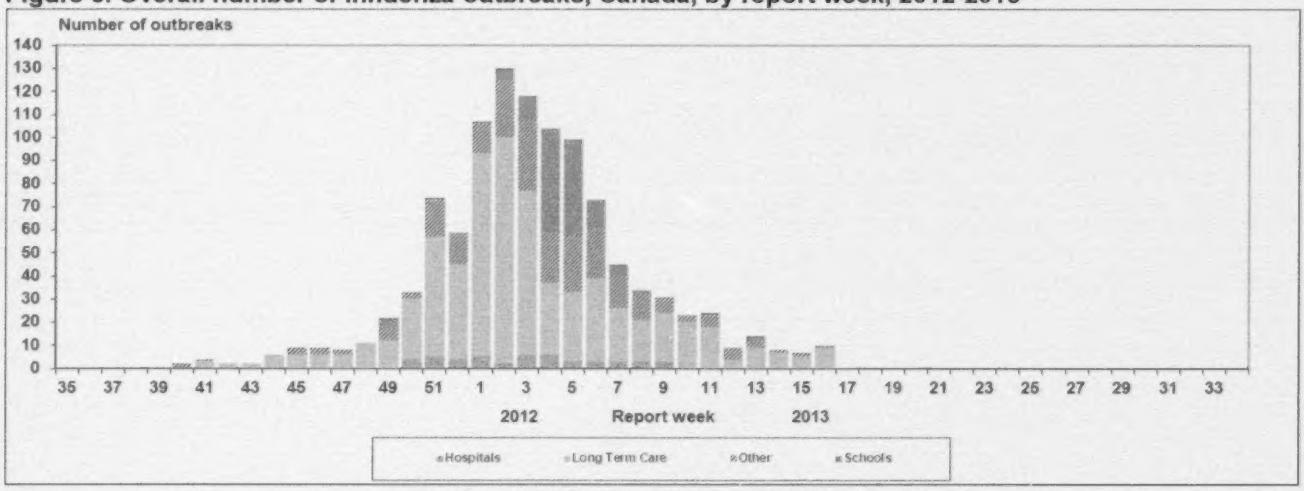
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2012-2013 (Total number of influenza surveillance regions in Canada=58)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2012-2013



Influenza and Other Respiratory Virus Detections

The overall percentage of positive influenza tests was stable for the sixth consecutive week (11.3% in week 16) as a result of the continued upward trend of influenza B detections observed since week 03. Detections of influenza B increased to 89.4% of positive influenza detections in week 16 (Figure 4). Among the influenza viruses detected in week 16 (n=397), 10.6% were positive for influenza A viruses [of which 38.1% were A(H1N1)pdm09, 9.5% were A(H3), and 52.4% were A(unsubtyped)] (Table 1). Cumulative influenza virus detections by type/subtype to date are as follows: 88.0% influenza A [34.5% A(H3), 4.4% A(H1N1)pdm09 and 61.1% A(unsubtyped)] and 12.0% influenza B (Table 1).

Detailed information on age and type/subtype has been received for 23,293 cases to date this season (Table 2). The proportion of cases by age group is as follows: 14.0% <5 years; 9.6% between 5-19 years; 15.7% between 20-44 years; 17.0% between 45-64 years of age; 43.7% ≥65 years.

The percentage of positive tests for rhinovirus continued its slow increase since week 01 to 11.3% in week 16. The percentage of positive tests for parainfluenza (5.3%) has also been increasing gradually over the past 8-10 weeks. The percentage of tests positive for respiratory syncytial virus (RSV) (6.4%) continued its decline from a peak in week 08. The percentage of positive tests for human metapneumovirus (hMPV) (5.0%) decreased for the second week in a row, and the percentage of positive tests for coronavirus (1.8%) has been decreasing slowly since week 04 (Figure 5)*.

* For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly and Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2012-2013

Reporting provinces	Weekly (April 14 to April 20, 2013)						Cumulative (August 26, 2012 to April 20, 2013)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	2	0	0	0	2	23	1898	0	1448	211	239	374
AB	7	0	0	7	0	36	2326	0	1760	423	143	650
SK	3	0	1	0	2	14	831	0	475	73	283	237
MB	1	0	0	0	1	2	655	0	78	10	567	70
ON	13	0	3	7	3	73	8220	0	3771	352	4097	724
QC	11	0	0	0	11	193	9774	0	546	32	9196	1527
NB	3	0	0	1	2	12	1853	0	771	65	1017	37
NS	2	0	0	1	1	2	382	0	165	7	210	6
PE	0	0	0	0	0	0	111	0	76	5	30	1
NL	0	0	0	0	0	0	714	0	152	0	562	15
Canada	**42**	**0**	**4**	**16**	**22**	**355**	**26764**	**0**	**9242**	**1178**	**16344**	**3641**

*Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2012-2013*

Age groups	Weekly (April 14 to April 20, 2013)					Cumulative (Aug. 26, 2012 to April 20, 2013)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	3	3	0	0	49	2648	207	849	1592	617
5-19	0	0	0	0	52	1450	66	630	754	795
20-44	7	2	2	3	29	3143	319	1207	1617	512
45-64	4	0	0	4	31	3442	300	1196	1946	510
65+	4	0	0	4	64	9579	120	3599	5860	597
Unknown	0	0	0	0	0	167	20	145	2	0
Total	**18**	**5**	**2**	**11**	**225**	**20429**	**1032**	**7626**	**11771**	**3031**

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2012-2013

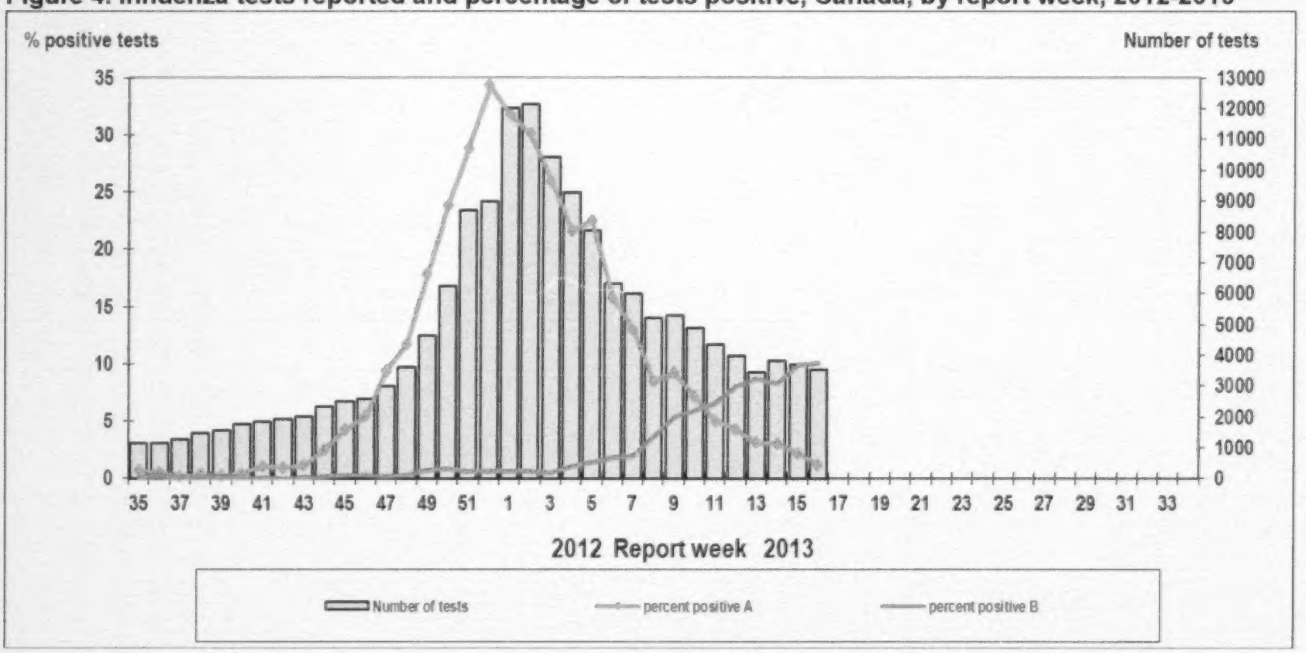
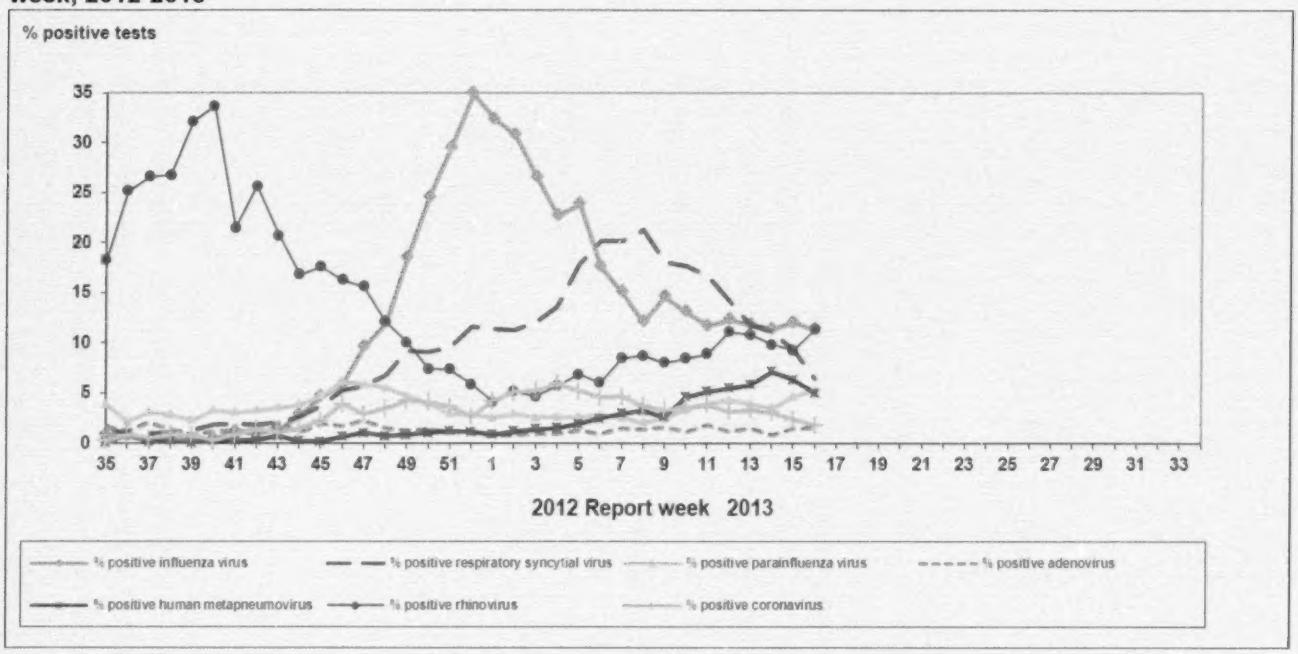


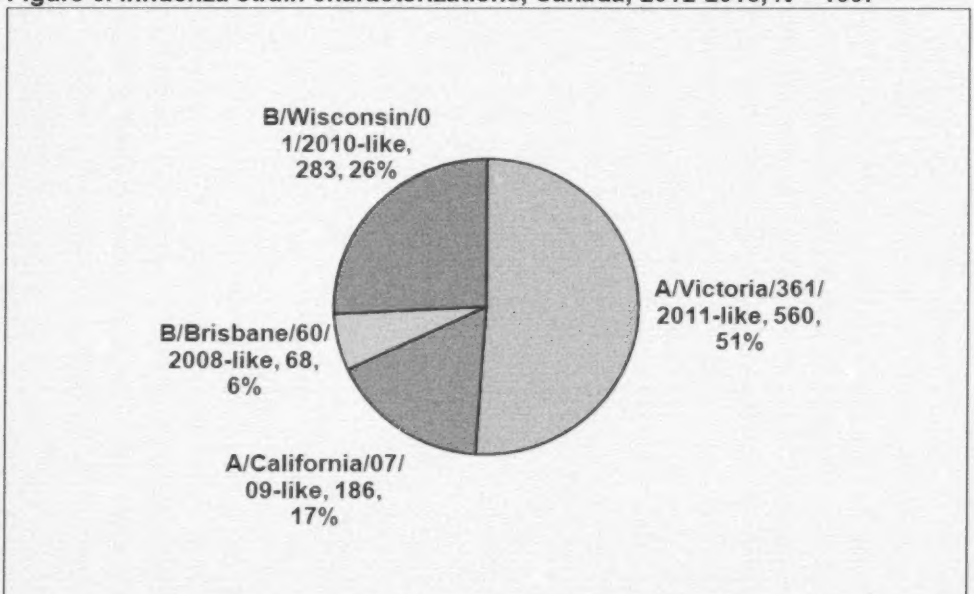
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2012-2013



Influenza Strain Characterizations

During the 2012-13 season, the National Microbiology Laboratory (NML) has antigenically characterized 1097 influenza viruses. The 560 influenza A(H3N2) viruses were antigenically similar to the vaccine strain A/Victoria/361/2011 and the 186 A(H1N1)pdm09 viruses were antigenically similar to the vaccine strain A/California/07/09. Among the influenza B viruses, 283 were antigenically similar to the vaccine strain B/Wisconsin/01/2010 (Yamagata lineage) and 68 were similar to B/Brisbane/60/2008 (Victoria lineage; component of the 2011-2012 seasonal influenza vaccine) (Figure 6).

Figure 6. Influenza strain characterizations, Canada, 2012-2013, N = 1097



Note: The recommended components for the 2012-2013 Northern Hemisphere influenza vaccine include: an A/Victoria/361/2011 (H3N2)-like virus; an A/California/7/2009 (H1N1)pdm09-like virus; and a B/Wisconsin/1/2010-like virus.

Antiviral Resistance

During the 2012-13 season, NML has tested 1013 influenza viruses for resistance to oseltamivir, and 1010 influenza viruses for resistance to zanamivir. Among these, one A(H3N2) virus was resistant to oseltamivir and zanamivir. A total of 1110 influenza A viruses were tested for amantadine resistance and all but one were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2012-2013

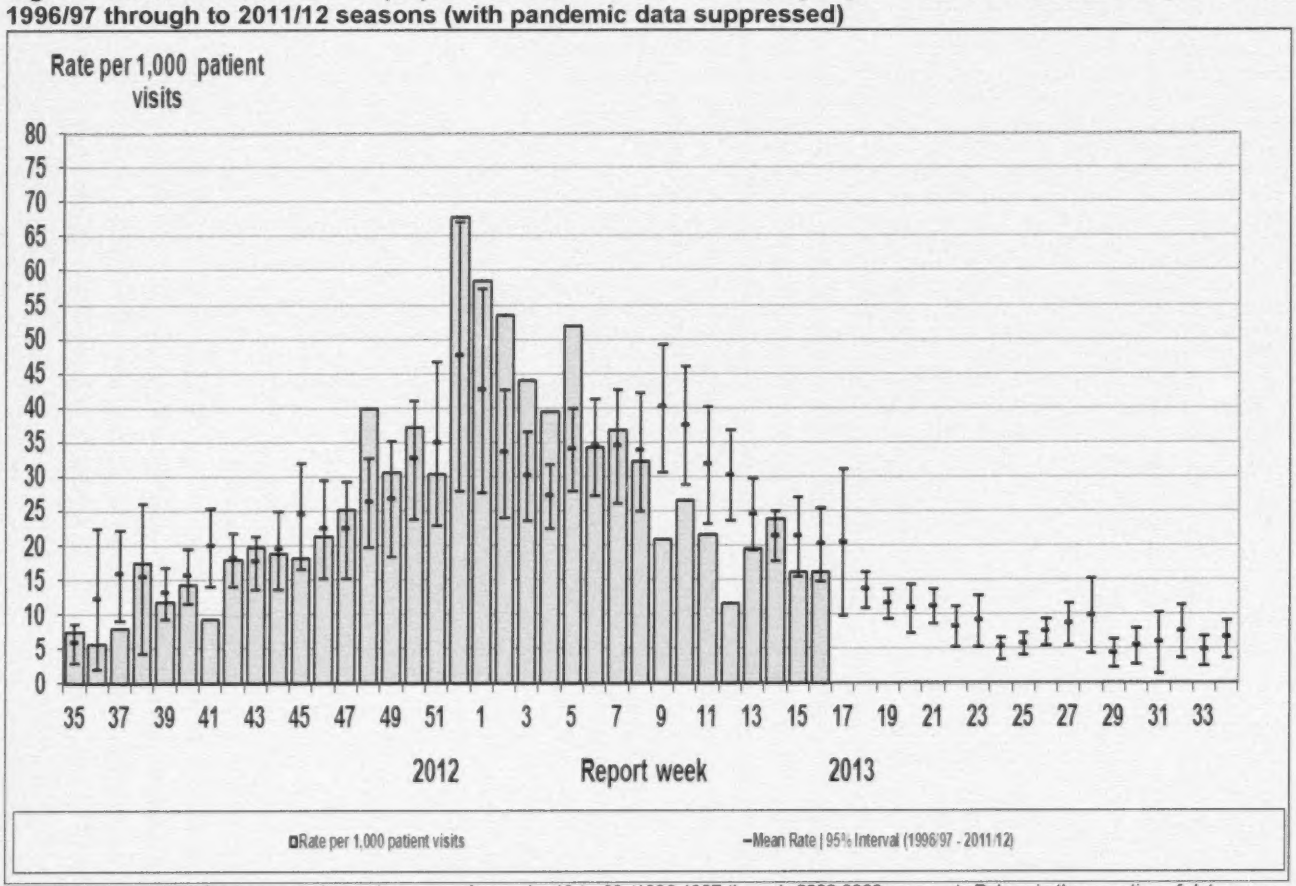
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	554	1 (0.2%)	554	1 (0.2%)	915	914 (99.9%)
A (H1N1)	164	0	161	0	195	195 (100%)
B	295	0	295	0	NA*	NA*
TOTAL	1013	0	1010	0	1110	1109 (99.9%)

* NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate was stable at 16.1 ILI consultations per 1,000 patient visits in week 16, and remains within the expected range (Figure 7). In week 16, the highest consultation rate was observed in children 5 to 19 years of age (46.9/1,000).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2012-2013 compared to 1996/97 through to 2011/12 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 16, 21 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 16 in week 15. All but one of the cases reported in week 16 were identified with influenza B. The age distribution is as follows: 3 (14.3%) between 0-5 months, 5 (23.8%) between 6-23 months, 7 (33.3%) 2-4 years of age, 4 (19.0%) 5-9 years of age and 2 (9.5%) 10-16 years of age. Five cases were admitted to an intensive care unit (ICU) during week 16, three children 6-23 months of age and two 2-4 years of age, all with influenza B. One death was reported in week 16, a child 6-23 months of age with an underlying condition, infected with influenza B.

Since the start of the 2012-13 season, a total of 820 influenza-associated paediatric hospitalizations have been reported by the IMPACT network: 615 (75.0%) with influenza A [of which 121 (19.7%) were A(H3N2), 22 (3.6%) were A(H1N1)pdm09 and the remaining 472 were A(unsubtyped); and 205 (25.0%) with influenza B. The distribution of cases by age group is as follows: 152 (18.5%) <6 months of age; 194 (23.7%) age 6-23 months; 234 (28.5%) age 2-4 years; 171 (20.9%) age 5-9 years; and 69 (8.4%) age 10-16 years. Eighty-five (10.4%) of the 820 cases were admitted to the ICU. Of the 61 ICU admissions with available data, 53 (86.9%) cases had at least one co-morbidity. One death has been reported to date this season.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 16, seven laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 16 in week 15. Four of the seven hospitalizations were cases of influenza B, and three were untyped. Three cases were ≥65 years of age, two were 45-64 years of age, and two were 20-44 years of age. No ICU admissions or deaths were reported in week 16.

From November 4, 2012 to April 20, 2013, 1,735 influenza-associated adult hospitalizations were reported by the PCIRN-SOS network: 1,590 (91.6%) with influenza A [of which 305 were A(H3N2), 16 were A(H1N1)pdm09, and 1,269 were A(unsubtyped)]; 94 (5.4%) with influenza B, and the type has not been reported for 51 cases. The age distribution of hospitalizations is as follows: 1,193 (68.8%) were ≥65 years of age, 349 (20.1%) were 45-64 years, 185 (10.7%) were 20-44 years, and 8 (0.5%) were <20 years of age. ICU admission was required for 201 hospitalizations; the majority of which were adults ≥65 years of age (121; 60.2%). Of the ICU admissions, 82 (40.8%) had at least one co-morbidity, three (1.5%) had no co-morbidities, and 116 had no information to date. A total of 112 deaths have been reported: 26 with influenza A(H3N2), one with A(H1N1)pdm09, 79 with A(unsubtyped), 5 with influenza B, and one untyped. More than 85% of the deaths (96/112) were in adults ≥65 years of age, 13 (11.6%) were adults 45-64 years of age, and 3 (2.7%) were 20-44 years of age. Fifty-one (45.5%) deaths occurred in individuals who had at least one co-morbidity. Detailed clinical information on co-morbidities is not known for the remaining cases.

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 16, 126 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. The majority of cases were influenza A (67.5%). The highest proportion of hospitalisations were in adults ≥65 years of age (53.2%), followed by adults 45-64 years of age (15.9%). Of the 21 cases with available data, three cases were admitted to the ICU: two 45-64 years of age and one 0-4 years of age. Five deaths were reported in week 16, four ≥65 years of age and one 45-64 years of age, all with influenza A.

To date this season, 4,489 influenza-associated hospitalizations have been reported, of which 91.0% have been influenza A. Of those subtyped (48.4%), influenza A(H3) was the predominant influenza strain. The cumulative proportion of hospitalizations with influenza B continues to increase (9.1% in week 16). Age information was available for 4,486 cases, and the age distribution is as follows: 2,429 (54.1%) were ≥65 years of age; 758 (16.9%) were 45-64 years of age; 400 (8.9%) were 20-44 years of age; 40 (0.9%) were 15-19 years of age; 199 (4.4%) were 5-14 years; and 660 (14.7%) were 0-4 years of age. Of the 1,200 cases with available data, there have been 190 hospitalisations for which admission to an ICU was required; the highest proportions have been in adults 45-64 years of age, followed by adults ≥65 years of age (36.3% and 34.2%, respectively). To date, 286 deaths have been reported: 236 adults ≥65 years of age, 33 adults 45-64 years; 11 adults 20-44 years, one child 5-14 years of age, and 5 were children 0-4 years of age. It is important to note that the cause of death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

Note*: The number of new influenza-associated hospitalizations and deaths reported by the Aggregate Surveillance System each week may be overestimated, as it may include retrospective updates to data from Ontario for previous weeks. These data may also include cases reported by the IMPACT and PCIRN networks. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not reported in Ontario.

International Influenza Updates

WHO: The most recent WHO surveillance report (26 April 2013) summarizes global influenza surveillance data from week 15 (7-13 April 2013). In temperate regions of the northern hemisphere, influenza activity is near inter-seasonal levels, although persistent transmission is reported in many countries due to increasing detections of influenza B. Analysis from 12 European countries in the second week of April revealed levels of pooled all-cause mortality among adults ≥65 years of age higher than observed in the previous three years. Mortality data for younger age groups was similar to previous seasons. In northern Africa and the Middle East, influenza activity has been declining since late February. The timing and pattern of circulating virus types was similar to that seen in Europe, with A(H1N1)pdm09 predominant in most countries. The exception was Egypt where an earlier peak was reported, almost entirely associated with A(H3N2). Influenza activity continued to decrease in temperate regions of Asia since peaking at the end of January, although activity persists in China and the Republic of Korea. Influenza A(H3N2) has been the most commonly detected virus in northern Asia this season although in northern China A(H1N1)pdm09 was predominant in the second half of the season. In tropical regions of Asia, influenza activity was low, with co-circulation of all three types/subtypes. Transmission in India and Sri Lanka appears to have peaked in late March. In southern China, no overall increases in ILI activity have been noted since the appearance of A(H7N9) in Shanghai. In Central America and the Caribbean, a few countries reported low-level circulation of influenza A, but most cases of ILI were associated with other respiratory viruses (predominantly RSV). In Tropical South America Brazil and Ecuador reported increasing influenza A activity in the past several weeks. A few countries in tropical areas of Central Africa reported low-level but persistent influenza circulation with all three virus types. Influenza activity in temperate countries of the southern hemisphere is at inter-seasonal levels.
World Health Organization influenza update

United States: During week 16, influenza activity decreased. Three states reported widespread influenza activity, 3 states reported regional influenza activity, and 8 states reported local activity. The national percentage of outpatient visits for ILI was 1.1%, which is below the national baseline. All 10 regions reported ILI below region-specific baseline levels and all states reported low or minimal ILI activity in week 16. The percentage of deaths due to pneumonia and influenza was at or above the epidemic threshold between weeks 01 and 12, but has been below the epidemic threshold for the past three weeks, and was 6.7% in week 16. The proportion of tests positive for influenza viruses declined to 7.4% in week 16. Of the positive influenza detections, 64.8% were influenza B. Since October 1, 2012, the CDC has antigenically characterized 2,209 influenza viruses. Among influenza A(H3N2) viruses, 1,260 (99.7%) were A/Victoria/361/2011-like, and 4 (0.3%) showed reduced titers to A/Victoria/361/2011 antiserum. Among influenza A(H1N1)pdm09 viruses, 207 (98.6%) were A/California/7/2009-like, and 3 (1.4%) showed reduced titers to A/California/7/2009-like antiserum. Among influenza B viruses, 494 (67.2%) were B/Wisconsin/01/2010-like belonging to the Yamagata lineage of viruses; and 241 (32.8%) to the B/Victoria lineage. Two (0.4%) A(H1N1)pdm09 and two (0.1%) A(H3N2) oseltamivir-resistant viruses have been reported to date this season. Among the 12,250 influenza-associated hospitalizations reported to date this season, 79.4% were associated with influenza A of which 96.1% were A(H3N2), and 50% were among adults ≥65 years. A total of 131 influenza-associated paediatric deaths have been reported to date this season, 61 with influenza A, 68 with influenza B and one with both influenza A and B.
Centers for Disease Control and Prevention seasonal influenza report

Europe: In week 16, influenza activity is below seasonal thresholds in most countries. Most countries reported low intensity of ILI/ARI activity and a stable or decreasing trend. The percentage of sentinel specimens positive for influenza continues to decline to 23% in week 16. The proportion of influenza B detections has increased from 24% in week 03 to 57% in week 16. Among influenza A viruses in week 16, 67% were A(H3N2) and 33% were A(H1N1)pdm09. Since the beginning of the season, 63% of detections from sentinel and non-sentinel sources were influenza A [67% A(H1N1)pdm09 and 33% A(H3N2)] and 37% were influenza B. Among the 623 A(H1N1)pdm09 viruses tested for resistance to oseltamivir from 12 countries, 13 (2%) were found to contain the H275Y mutation: four were specimens from hospitalized and outpatients not exposed(3) or with unknown(1) exposure to oseltamivir, while the other nine viruses were detected in hospitalized and/or immunocompromised patients receiving oseltamivir treatment. The number of hospitalizations for severe acute respiratory illness (SARI) and the number positive for influenza have returned to pre-season levels in most participating countries.
EuroFlu weekly electronic bulletin

Emerging Respiratory Pathogens

Human Avian Influenza
Influenza A(H7N9): Between April 19 and April 26, the WHO reported an additional 25 cases of avian influenza A(H7N9) in eastern China. The WHO reported the first case in Shandong province on 23 April 2013, and the Taipei Centres for Disease Control, Taiwan, has reported a travel-related case of avian influenza A(H7N9). The individual was working in the Jiangsu province, became ill shortly after arriving in Taiwan, and was subsequently diagnosed with

avian influenza A(H7N9). This individual likely acquired the infection in mainland China. The public health risk posed avian influenza A(H7N9) from China to Canada is considered low at this time. Since March 2013, 112 cases, of which 23 were fatalities, of avian influenza A(H7N9) have been reported from five provinces and two municipalities. The numbers of cases (and deaths) by jurisdiction is as follows: Anhui 4 (1), Henan 4 (0), Jiangsu 23 (4), Shandong 1 (0), Zhejiang 44 (6), and municipalities of Beijing 1 (0) and Shanghai 34 (12). Taipei CDC reports one travel-related case. More than 1,800 close contacts of confirmed cases are being closely monitored. Some of the confirmed cases had contact with animals or with an animal environment. Investigations into the source and route of transmission are still in progress, but there has been no evidence of ongoing person-to-person spread. WHO is in contact with national authorities and is following the event closely.

PHAC – Avian influenza A(H7N9)
PHAC – A(H7N9) risk assessment
WHO – Influenza at the human-animal interface
WHO – Disease Outbreak News
WHO – Frequently Asked Questions on human infection with influenza A(H7N9)

Human Swine Influenza

No new human cases of infection with swine influenza viruses or variants were reported in week 16.

Centers for Disease Control and Prevention seasonal influenza report

Novel Coronavirus (HCoV-EMC/2012)

No new cases of novel coronavirus (HCoV-EMC/2012) have been reported by WHO since 26 March 2013. Since April 2012, 17 laboratory-confirmed cases of HCoV-EMC/2012 have been identified, including 11 deaths.

PHAC – Novel coronavirus (HCoV-EMC/2012)
PHAC – HCoV-EMC/2012 risk assessment
WHO – Coronavirus infections

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2012-2013 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2012-2013 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Influenza Activity Levels Definition for the 2012-2013 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles.